

CLAIMS

1. An apparatus for creating a pattern on a workpiece sensitive to light radiation, comprising:

5 a light source for emitting light flashes in the wavelength range from EUV to IR,

 a spatial light modulator (SLM) having a multitude of modulating elements (pixels), adapted to being illuminated by said radiation

10 a projection system creating an image of the modulator on the workpiece,

 an electronic data processing and delivery system receiving a digital description of the pattern to be written, converting said pattern to modulator signals, 15 and feeding said signals to the modulator,

 a precision mechanical system for positioning said workpiece and/or projection system relative to each other

20 an electronic control system controlling the position of the workpiece, the feeding of the signals to the modulator and the intensity of the radiation, so that 25 said pattern is printed on the workpiece,

 wherein said electronic control system is further arranged to control a trigger signal to the light source for emitting the light flashes, said trigger signal being controlled in order to compensate for flash-to-flash time gitter in said light source.

2. The apparatus of claim 1, wherein the electronic control system is arranged to control the timing of the trigger signal.

30 3. The apparatus of claim 2, wherein the electronic control system is arranged to control a time offset of the trigger singal.

35 4. The apparatus of claim 3, wherein the offset value is estimated based on a measured delay between a trigger signal and a resulting exposure for at least one of the latest exposures.

5. The apparatus of claim 1, whereby the light source is a laser, and preferably an excimer laser.

6. The apparatus of claim 1, where the pattern is formed in photoresist, photopolymer or photographic
5 emulsion.

7. A method for creating a pattern on a workpiece sensitive to light radiation, comprising:

emitting light flashes in the wavelength range from EUV to IR,

10 modulating the emitted light with a spatial light modulator (SLM) having a multitude of modulating elements (pixels),

projecting an image of the modulator on the workpiece,

15 controlling the emitted radiation, the modulator and the positioning of the workpiece in relation to the projected image, based on a digital description of the pattern to be written, so that said pattern is printed on the workpiece,

20 wherein controlling of the emitted radiation involves controlling of a trigger signal for emitting the light flashes in order to compensate for flash-to-flash time gitter.

25 8. The method of claim 7, wherein the controlling of the trigger signal involves controlling of the timing of the trigger signal.

9. The method of claim 8, wherein a time offset of the trigger signal is controlled.

30 10. The method of claim 9, wherein the offset value is estimated based on a measured delay between a trigger signal and a resulting exposure for at least one of the latest exposures.

11. An apparatus for creating a pattern on a workpiece sensitive to light radiation, comprising:

35 a light source for emitting light flashes in the

wavelength range from EUV to IR,

a spatial light modulator (SLM) having a multitude of individually controllable modulating elements (pixels), adapted to being illuminated by said radiation

5 a projection system for creating an image of the modulator on the workpiece, and

an electronic control system controlling the position of the image created on the workpiece, the modulation elements of the modulator and the intensity of
10 the radiation, in accordance with an intended pattern to be printed, wherein said electronic control system is further arranged to control a trigger signal to the light source for emitting the light flashes in order to compensate for flash-to-flash time gitter in said light
15 source.

12. The apparatus of claim 11, wherein the electronic control system is arranged to control the timing of the trigger signal.

13. The apparatus of claim 12, wherein the electronic control system is arranged to control a time offset of the trigger singal.

14. The apparatus of claim 13, wherein the offset value is estimated based on a measured delay between a trigger signal and a resulting exposure for at least one of the latest exposures.
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15. The apparatus of claim 11, whereby the light source is a laser, and preferably an excimer laser.

16. The apparatus of claim 11, where the pattern is formed in photoresist, photopolymer or photographic emulsion.
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17. An apparatus for creating a pattern on a photosensitive workpiece, comprising:

a light source for emitting light flashes in the wavelength range from EUV to IR,

35 a projection system for directing the emitted light

to the workpiece, and

a control system arranged to control a trigger signal to the light source for emitting the light flashes, wherein the trigger signal is controlled in order to compensate for flash-to-flash time gitter in said light source.

18. The apparatus of claim 17, wherein the electronic control system is arranged to control the timing of the trigger signal.

10 19. The apparatus of claim 18, wherein the electronic control system is arranged to control a time offset of the trigger singal.

15 20. The apparatus of claim 19, wherein the offset value is estimated based on a measured delay between a trigger signal and a resulting exposure for at least one of the latest exposures.

21. A method for creating a pattern on a workpiece sensitive to light radiation, comprising:

20 emitting light flashes in the wavelength range from EUV to IR,
projecting the emitted light on the workpiece,
controlling a trigger signal for emitting the light flashes in order to compensate for flash-to-flash time gitter.

25 22. The method of claim 21, wherein the controlling of the trigger signal involves controlling of the timing of the trigger signal.

23. The method of claim 22, wherein a time offset of the trigger signal is controlled.

30 24. The method of claim 23, wherein the offset value is estimated based on a measured delay between a trigger signal and a resulting exposure for at least one of the latest exposures.